

Name: _____

Date: _____

A2 CC Review Q2 Exam 3

This review is not comprehensive. Be sure to study your notes, homework assignments and old tests as well.

1. Which of the following sets of ordered pairs would *not* be considered a function?

(1) $\{(-4, 1), (-1, 7), (3, 8), (5, 3)\}$

(2) $\{(-2, 5), (6, 1), (-2, 10), (6, -1)\}$

(3) $\{(2, 8), (4, 10), (6, 8), (8, 10)\}$

(4) $\{(-3, 5), (3, -5), (-6, 7), (6, -7)\}$

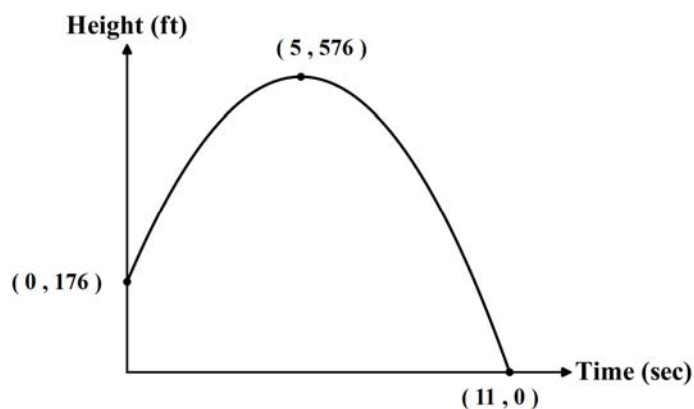
2. In the following graph, the height of an object, in feet, is given as a function of time in seconds. Which of the following would be the range of this function?

(1) $[0, 5]$

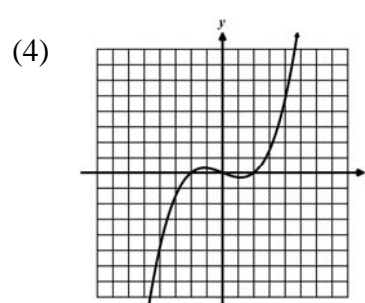
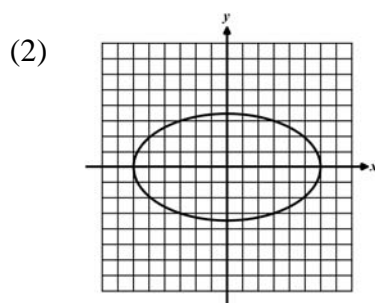
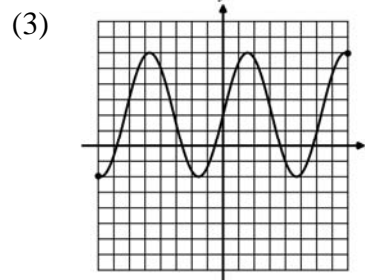
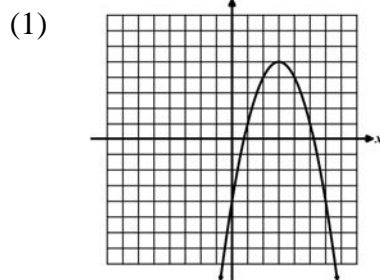
(2) $[0, 11]$

(3) $[176, 576]$

(4) $[0, 576]$



3. In which of the following four graphs is the output *not* a function of the input?

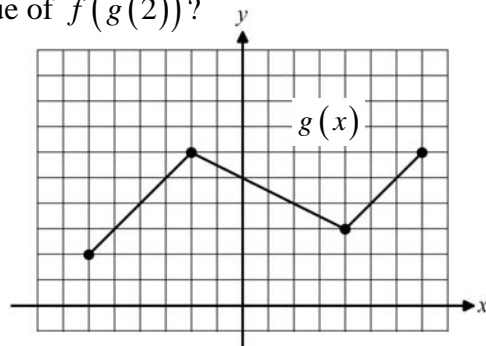


4. If $f(x) = -\frac{1}{2}x + 6$, then which of the following values solves the equation $f(x) = 10$?

- (1) 1 (3) -8
(2) -4 (4) 11

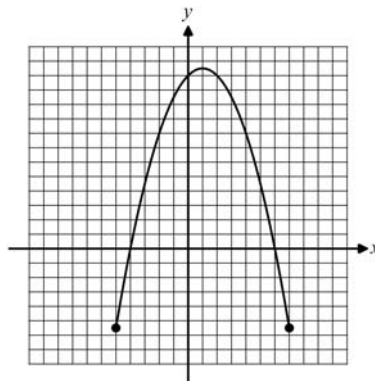
5. The function f is defined by the formula $f(x) = x^2 + 2$ and the function g is defined by the graph shown below. Which of the following is the value of $f(g(2))$?

- (1) 18 (3) 5
(2) 14 (4) 9



6. Given the function $f(x)$ shown in the graph below, for which of the following intervals is $f(x) > 0$?

- (1) $(0, 8)$
(2) $[0, 8]$
(3) $(-4, 6)$
(4) $[-4, 6]$



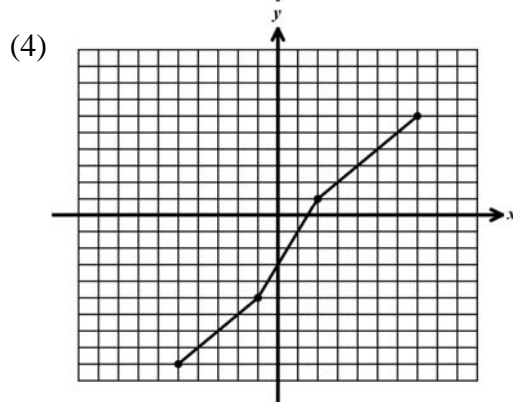
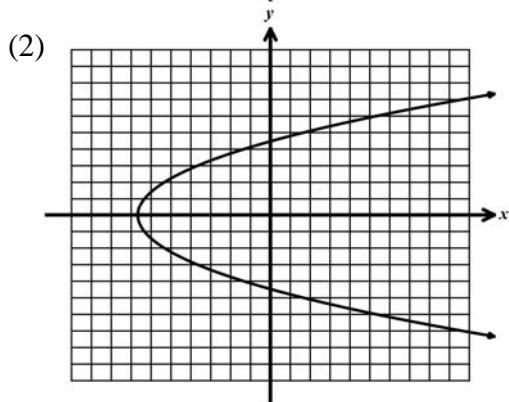
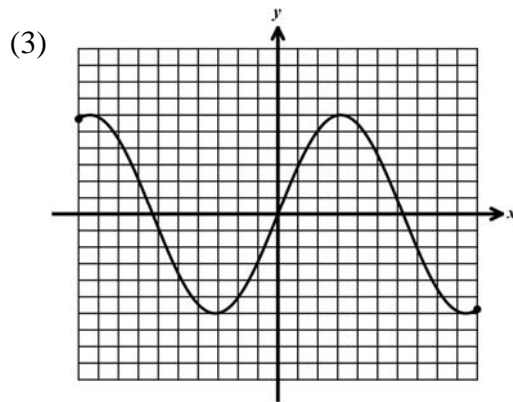
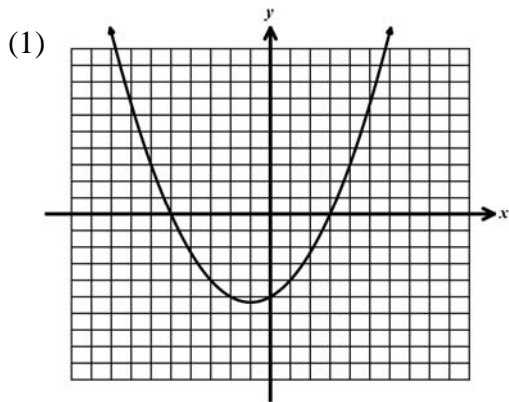
7. Which of the following values of x would *not* be in the domain of the function $f(x) = \frac{x-7}{2x+5}$?

- (1) 7 (3) -5
(2) $-2\frac{1}{2}$ (4) -7

8. If the point $(4, -2)$ lies on the graph of $y = f(x)$, then which of the following points must lie on the graph of its inverse, i.e. $y = f^{-1}(x)$?

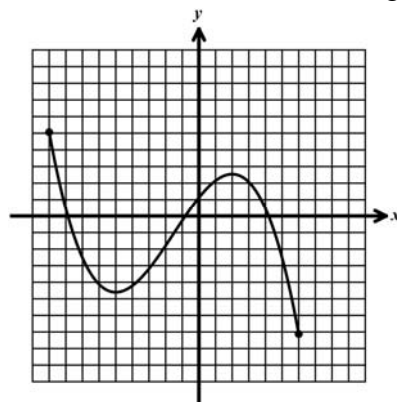
- (1) $(-2, 4)$ (3) $(-4, 2)$
(2) $\left(\frac{1}{4}, -\frac{1}{2}\right)$ (4) $(4, 2)$

9. Which of the following graphs represents a one-to-one function?



10. Given the function shown below, over which of the following intervals is the function always increasing?

- (1) $0 < x < 5$
- (2) $-5 < x < 2$
- (3) $-1 < x < 4$
- (4) $-9 < x < -5$



11. A circle whose center is at $(5, -3)$ and which passes through the point $(7, -8)$ has a radius equal to?

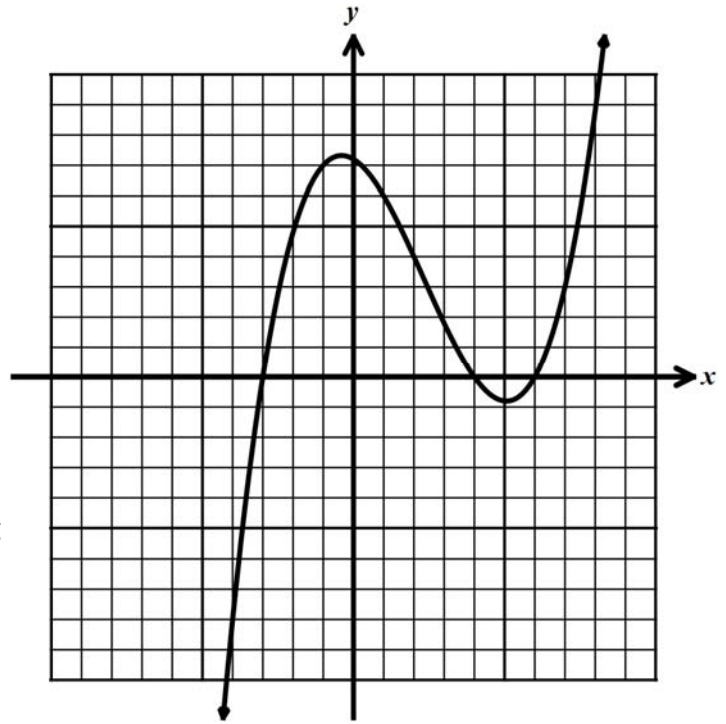
- (1) 5
- (2) $\sqrt{29}$
- (3) $\sqrt{44}$
- (4) 8

12. Given the function $y = f(x)$ shown graphed below, answer the following questions.

(a) State the value of $f(2)$.

(b) How many values solve the equation $f(x) = 5$?
Explain how you arrived at your answer.

(c) On the interval $0 < x < 4$ is the function increasing or decreasing? How can you tell?



(d) If a second function is defined by the formula $g(x) = \frac{2x-7}{3}$, then what is the value of $g(f(1))$? Show the work that leads to your answer.

(e) Would the inverse of this function also be a function? Explain your yes/no answer.

13. For the function $f(x) = \sqrt{x-9}$, either $x = 0$ or $x = 45$ is a member of its domain. Determine which and explain how you arrived at your answer.

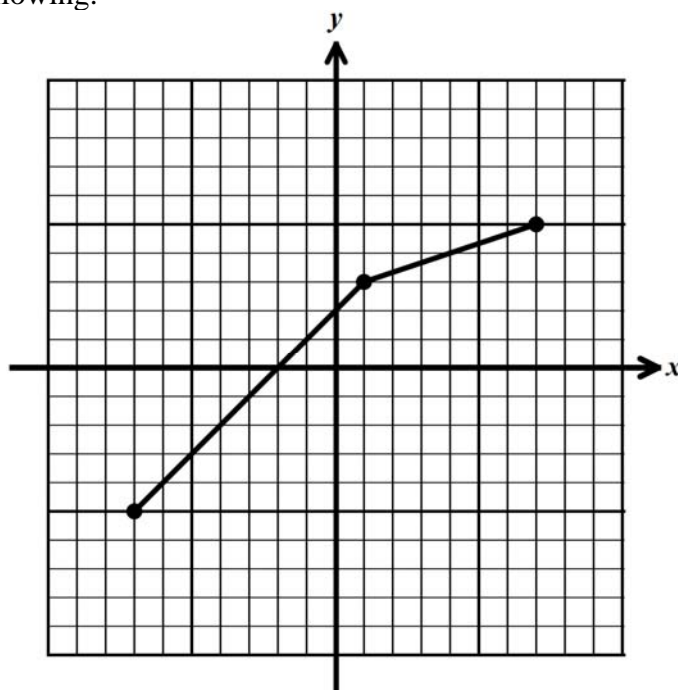
14. Is the function $y = |x - 6| + 2$ a one-to-one function? Explain your answer.

15. Given the function $y = f(x)$ shown below do the following.

(a) Graph the function's inverse, $f^{-1}(x)$.

(b) State the range of $f^{-1}(x)$.

(c) What is the value of $f^{-1}(-3)$?



16. The temperature of a room is measured over the span of the day with selected values given in the table below.

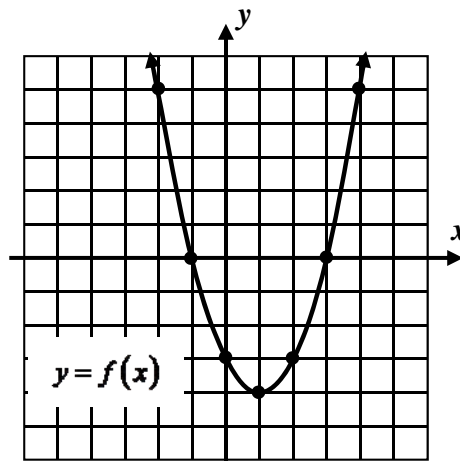
| | | | | | | | | | |
|------------------------------------|-----|-----|-----|-----|-----|------|-----|-----|------|
| Time (hrs) | 0.5 | 1.5 | 2.0 | 4.0 | 5.5 | 7.25 | 8.0 | 9.5 | 10.0 |
| Temperature ($^{\circ}\text{F}$) | 64 | 66 | 71 | 78 | 81 | 79 | 71 | 68 | 66 |

Based on this table, explain why temperature can be considered a function of time but time cannot be considered a function of temperature.

17. What are the coordinates of the center of the circle whose equation is $x^2 + 4x + y^2 - 10y + 12 = 0$?

18. Determine the center and radius of the circle whose equation is $x^2 + 6x + y^2 - 14y = 42$

19. The function $f(x) = x^2 - 2x - 3$ is graphed on the grid below. Express the domain and range in interval notation.



20. Which of the following values of x would not be in the domain of the function $y = \sqrt{x+4}$? Explain your answer.

- (1) $x = 0$ (3) $x = -3$
 (2) $x = 5$ (4) $x = -8$

21. A function is given by the set of ordered pairs $\{(2, 5), (4, 9), (6, 13), (8, 17)\}$. Write its domain and range in roster form.

Domain:

Range:

22. The function $h(x) = x^2 + 5$ maps the domain given by the set $\{-2, -1, 0, 1, 2\}$. Which of the following sets represents the range of $h(x)$?

- (1) $\{0, 6, 10, 12\}$ (3) $\{5, 6, 9\}$
 (2) $\{5, 6, 7\}$ (4) $\{1, 4, 5, 6, 9\}$

23. Which of the following values of x would *not* be in the domain of the function defined by $f(x) = \frac{x-2}{x+3}$?

- (1) $x = -3$ (3) $x = 3$
 (2) $x = 2$ (4) $x = -2$

24. Determine any values of x that do not lie in the domain of the function $f(x) = \frac{3x+2}{2x-10}$. Justify your response.

25. Which of the following values of x *does* lie in the domain of the function defined by $g(x) = \sqrt{2x-7}$?

- (1) $x = 0$ (3) $x = 3$
(2) $x = 2$ (4) $x = 5$

26. Which of the following would represent the domain of the function $y = \sqrt{6-2x}$?

- (1) $\{x : x > 3\}$ (3) $\{x : x \leq 3\}$
(2) $\{x : x < 3\}$ (4) $\{x : x \geq 3\}$

27. A child starts a piggy bank with \$2. Each day, the child receives 25 cents at the end of the day and puts it in the bank. If A represents the amount of money and d stands for the number of days then $A(d) = 2 + 0.25d$ gives the amount of money in the bank as a function of days (think about this formula).

(a) Evaluate **$A(1)$, $A(7)$, and $A(30)$** .

(b) For what value of d will **$A(d) = \$10.50$** .

(c) Explain why the domain does not contain the value **$d = 2.5$** .

(d) Explain why the range does not include the value **$A = \$3.10$** .

28. Write $\frac{x^3 - 10x^2 + 11x + 70}{x + 2}$ in the form $q(x) + \frac{r}{x + 2}$, where $q(x)$ is a polynomial and r is a constant.

29. What is the domain of $\frac{2}{\sqrt{x^2 - x - 30}}$?

30. Is $(x+4)$ a factor of $x^4 - 3x^3 + 25x^2 - 10$. Explain your answer.

31. Solve $\frac{x+1}{x-3} \geq 2$ and express your answer in set builder notation.

32. Solve $x^2 + 40 = -6x$ by completing the square.

33. Solve for all zeros: $P(x) = x^5 + 2x^3 - 24x$